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Of Trolls, Davids, Goliaths, and Kings: Narratives and Evidence in the Litigation of High-Tech Patents

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OF TROLLS, DAVIDS, GOLIATHS, AND KINGS: NARRATIVES AND EVIDENCE IN THE LITIGATION OF HIGH-TECH PATENTS*

COLLEEN V. CHIEN**

While each patent dispute is unique, most fit the profile of one of a limited number of patent litigation stories. A dispute between an independent inventor and a large company, for instance, is often cast in “David v. Goliath” terms. When two large companies fight over patents, in contrast, they are said to be playing the “sport of kings.” Some corporations engage in “defensive patenting” in order to deter others from suing them. Patent licensing and enforcement entities who sue have been labeled “trolls.” Finally, observers of the patent system call the use of patent litigation to impose or exploit financial distress “patent predation.”

These stories, routinely invoked by the press, advocates, and academics, shape public understanding of the patent system. In this Article, I describe, then match, these stories to data on patent litigations to determine which types of suits are most prevalent. I focus exclusively on the litigation of high-tech patents—covering hardware, software, and financial inventions—using data from the Stanford Intellectual Property Clearinghouse for cases initiated in U.S. District Courts from January 2000 through March 2008.

The data shows that the reality is more complicated than the rhetoric regarding patent litigation suggests. For instance, many blame nonpracticing entities (“NPEs”) for a majority of the

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** Assistant Professor, Santa Clara University School of Law. I thank Josh Walker, Mark Lemley, and the underwriters of the Stanford IP Litigation Clearinghouse for making this research possible; Michael Risch, Ted Sichelman, Matt Sag, David Schwartz, Eric Goldman, Jay Kesan, Cynthia Ho, William Flachsbart, and attendants at the Chicago 2009 IP Colloquium and North Carolina Law Review 2008 Frontiers of Empirical Patent Law Symposium for their comments; BStreet Capital for its analysis of the revenues of the Russell 3000® public companies; Don Cung, Andy Chen, Nikki Qi, Jonathan Garfinkel, and Matt Reeder for excellent research assistance; and Dirk Calcoen for his support.

problems with the patent system. But they bring only a minority of patent suits: 17% of high-tech patent suits in the last eight years. However, NPEs often name multiple defendants and sometimes, rather than sue, are sued, for declaratory judgment (“DJ”). Counting suits based on the number of defendants and including DJ cases, the NPE share rises to 28% of all high-tech patent suits. This average reflects an increase in NPE suits as a proportion of all suits over an eight-year period, from 22% in 2000–2001 to 36% in 2006 to March 2008, counting defendants, or from 10% to 20%, counting cases. I also report the variation by industry based on the absolute number of suits—the share of hardware patent NPE suits (26%) was nearly triple that of financial patent NPE suits (9%). These numbers provide a richer context for understanding the NPE phenomenon.

Another widespread perception of the patent system is that large companies dread going to court, carefully constructing portfolios of patents to avoid doing so. The practice of “defensive patenting” has been well-documented and theorized. Yet, I found that public and large private companies initiated 42% of all lawsuits studied, 28% of the time against other large companies—the largest single category. They also defend against many other suits, brought by NPEs, small inventors, and individuals. These data suggest that defensive patenting, which is supposed to keep large firms out of court, is at least an incomplete—and perhaps a failing—strategy for many companies.

This Article also reports on the other major narratives of patent litigation. 4% of the suits were initiated by individual inventors (David v. Goliath), 18% of the suits were brought by small private companies against public or large private ones (small v. large), 16% pit one small- or medium-sized company against another (limited stakes), and in 8% of the suits, a large firm sued a small one (predation profile). These and other findings provide a snapshot of patent litigation that should both inform current efforts to reform the patent system and serve as a basis for further investigation into its functioning.

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INTRODUCTION

Patent litigation has alternatively been called the sport of kings¹ and the business of sharks.² Some observers of the patent system are troubled by patent wars, like the multi-patent, multi-venue, multi-million dollar dispute between wireless kings Qualcomm and Broadcom.³ Others see the rise of aggressive and opportunistic

1. James Bessen & Michael J. Meurer, *Lessons for Patent Policy from Empirical Research on Patent Litigation*, 9 LEWIS & CLARK L. REV. 1, 2 (2005) (citing Douglas J. Kline, *Patent Litigation: The Sport of Kings*, TECH. REV., Apr. 28, 2004, <http://www.technologyreview.com/business/13562/>).

2. Markus Reitzig, Joachim Henkel & Christopher Heath, *On Sharks, Trolls, and Other Patent Animals—'Being Infringed' as a Normatively Induced Innovation Exploitation Strategy 2* (Working Paper, 2006), available at <http://ssrn.com/abstract=885914>.

3. In just one of its suits, for example, Qualcomm was ordered to pay Broadcom over \$8.5 million for discovery abuses. Jerold S. Solovy & Robert L. Byman, *Qualcomm Case Sends Tremors Nationwide*, LAW.COM, Jan. 31, 2008, <http://www.law.com/jsp/legaltechnology/pubArticleLT.jsp?id=1201687552037>. Yet that number pales in comparison to the reported \$11.1 billion in revenue that Qualcomm received in the 2008 fiscal year in royalty payments from patent licenses. Press Release, Qualcomm, Inc., *Qualcomm Announces Fourth Quarter and Fiscal 2008 Results* (Nov. 6, 2008), available at

enforcement of patents by non-practicing entities (“NPEs”) against established businesses to be the real bane of the patent system.⁴ Still others lament the so-called “explosion” of patent litigation across the board and in different industries, because it may discourage, rather than encourage, innovation.⁵

Stories like this shape public understanding of the patent system. Commentators note, for instance, that popular sentiment has turned against NPEs to such a degree that “the epithet [patent troll] is now commonly bandied about in courts and the halls of Congress.”⁶ In the popular media, in contrast, independent invention and independent inventors are widely celebrated. The reality TV show *American Inventor* and movie *Flash of Genius*⁷ put a positive face on innovation and its protection, through the patent system. Indeed, many believe that protection of the small inventor provides the best yardstick of how well the patent system is working.⁸

Which account of the patent system is correct? Or, to be more precise, to what extent does each story describe the patent litigation landscape? Surprisingly few, if any, studies answer this question. Although each type of patent litigation has been studied

http://files.shareholder.com/downloads/QCOM/407452927x0x247758/4797c963-2646-43debef4-391b3752ea2b/QCOM_Q408ERFINAL.pdf.

4. Chris Coletta, *Red Hat Among Companies in Crosshairs of License Suit*, TRIANGLE BUS. J. (Raleigh, N.C.), May 16, 2008, at 7, available at <http://www.bizjournals.com/triangle/stories/2008/05/19/story13.html>.

5. James Bessen & Michael J. Meurer, *The Patent Litigation Explosion* 28–29 (Boston Univ. School of Law Working Paper Series, Paper No. 05-18, 2005), available at <http://ssrn.com/abstract=831685> (describing how patent litigation may interfere with the innovation incentive, the avowed purpose of the patent system).

6. Ronald S. Katz, Shawn G. Hanson & Omair Farooqui, *Patent Trolls: A Selective Etymology*, IP LAW 360, Mar. 20, 2008, available at http://www.manatt.com/uploadedFiles/News_and_Events/Articles_By_Us/patentroll.pdf. But the term arguably masks the reality that each patent litigation has at least two sides. Critics of the term “troll,” for instance, believe it masks “big businesses’ use of public relations to solve operational problems.” Raymond Niro & Robert Greenspoon, *Are Patent Trolls Really Undermining the Patent System?*, IP LITIGATOR, Sept.–Oct. 2006, at 13, 16. Likewise, when an individual inventor sues a corporation, the corporation is more likely to see the inventor as a crank than a heroic independent inventor. I am thankful to Matt Sag for making this point to me.

7. *American Inventor* (ABC television broadcast 2006–2007); *FLASH OF GENIUS* (Intermittent Productions 2008).

8. JAMES BESSEN & MICHAEL J. MEURER, *PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK* 165 (2008).

independently,⁹ no systematic attempt has been made to place the various types within the context of all patent litigations.¹⁰

This gap in understanding is problematic. Even if many think that NPEs are a problem, no one really knows the size of the problem.¹¹ Similarly, when a new patent war is started, it is difficult to know whether it represents the occasional, large patent fight or instead demonstrates the routine use and, some would argue, abuse of the patent system. More importantly, by focusing on problems associated with one or two types of patent litigation, other problems may be overlooked. Although the “squeakiest wheel”—that is, the patent story that gets the most attention—may deserve the grease, without data, it’s hard to be sure.

Yet understanding the prevalence of each patent litigation story is important, as each has its own culprit and call to action. Those who bemoan the rise of NPEs, for instance, have called for limits to the ability of patent holders to sue in inconvenient venues.¹² However, such a change would be made at the expense of patentees who benefit from patent law’s broad jurisdiction rules.¹³ Proponents of damages reform, on the other hand, argue that the current law does not properly account for the increasingly complex and overlapping nature of rights in technology products.¹⁴ They complain that this has allowed patentees to command disproportionately large royalties, which are passed on to consumers.¹⁵ Those who oppose change, in

9. See *infra* Parts I.A.1–6 (describing research on each of these patent stories).

10. See Bessen & Meurer, *supra* note 1, at 27 (stating that more research on patent litigation is needed).

11. The estimates range from 5% in 2000 and 2002 to 12% in 2008. See *infra* text accompanying notes 54–55.

12. See, e.g., Daniel McCurdy, *Patent Trolls Erode the Foundation of the U.S. Patent System*, SCI. PROGRESS, Fall & Winter 2008/2009, at 84–85 (describing the case for venue reform).

13. See, e.g., Letter from Ron Reardon & Louis Hoffman, Nat’l Ass’n of Patent Practitioners, to Harry Reid, Senate Majority Leader, and Mitch McConnell, Senate Minority Leader (Dec. 27, 2007), available at <http://www.napp.org/resources/NAPP-OppTo2007SenateBill.pdf> (criticizing venue reform as “weakening” patents).

14. Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 1991, 1994 (2007), available at <http://faculty.haas.berkeley.edu/SHAPIRO/stacking.pdf> (purporting to illustrate that “royalty stacking can become a very serious problem, especially in the standard-setting context where hundreds or even thousands of patents can read on a single product standard” and proposing reform of the methods for calculating reasonable royalties).

15. See *generally id.* (examining the phenomenon of royalty stacking, which occurs when a single product is subject to multiple patents, and its effect on consumers).

contrast, believe that such cases are rare and that the system should be left alone.¹⁶

This Article puts these concerns into context by identifying the major stories of patent litigation and then matching actual suits, based on party profile, to these stories. Using data from the Stanford Intellectual Property Litigation Clearinghouse (“IPLC”),¹⁷ launched publicly in December 2008, and drawing upon related empirical research, it attempts to answer two questions: who initiates patent lawsuits, and what types of suits are the most common? Unlike earlier studies of patent litigation, it tracks not only the number of cases filed, but also the number of defendants sued. It also takes into account declaratory judgment cases where the positions of patentee and infringer are reversed. In so doing, this Article presents a snapshot of patent litigation that should both inform current efforts to reform the patent system and serve as a basis for further investigation into its functioning.

This Article focuses on the litigation of high-tech (also referred to as computer-related) patents, covering hardware, software, and financial inventions. The high-tech community has been one of the most active in pushing for congressional patent reform¹⁸ and the source of many important innovations. Patenting behavior in each high-tech industry has been the subject of considerable academic study, providing a rich background to the current effort.¹⁹ Part I reviews this background, identifying the dominant patent litigation narratives. Part II describes the data and methods that were analyzed

16. See Innovation Alliance, Our Principles, <http://www.innovationalliance.net/about-us/our-principles/> (last visited Apr. 29, 2009) (holding as a principal that “The Current Law Regarding the Determination of a Patent’s Value is Appropriate”).

17. Stanford IP Litigation Clearinghouse, <http://www.law.stanford.edu/program/centers/ip/c/> (last visited Apr. 29, 2009). The Stanford IP Litigation Clearinghouse data is derived from PACER, an electronic service that allows users to obtain case and docket information from federal courts. Administrative Office of the U.S. Courts, PACER Service Center, <http://pacer.psc.uscourts.gov/> (last visited Apr. 29, 2009). After downloading all available cases from more than ninety courts (and by hand-collecting and scanning documents from others), raw data sets are parsed by a computer program into specific motions, objections, and decisions. The data is then hand-checked by research assistants to ensure integrity. Access to the IPLC database can be requested by emailing jwalker@law.stanford.edu.

18. See Coalition for Patent Fairness, Overview, <http://www.patentfairness.org/learn/about/> (last visited Apr. 29, 2009). The Coalition, which describes itself as “committed to the passage of patent legislation that will foster innovation and economic growth,” includes high-tech companies such as Apple, Cisco Systems, Dell, Google, HP, Intel, Mircon Technology, Inc., Microsoft, Oracle, Palm Inc., RIM, SAP, and Symantec. *Id.*

19. See *infra* Part I.A.

to develop a patent litigation landscape based on these narratives. Part III reports my results, summarizing who brings computer-related patent lawsuits and which types of patent litigations narratives are most prevalent. Part IV discusses the implications of my empirical findings.

I. BACKGROUND

While each patent dispute is unique, most fit the profile of one of a limited number of patent litigation stories. When an independent inventor sues a large company, for instance, a David v. Goliath match-up results.²⁰ In contrast, if the parties are more evenly matched, comprising two large private or publicly traded corporations, the result can be patent warfare, potentially of global dimensions.²¹ To avoid such wars, many companies defensively build their patent portfolios in an attempt to reach patent détente.²² Notwithstanding these efforts, many find themselves in court, across the courtroom from an NPE.²³ Finally, the strategic use of patent litigation by well-established large companies against their smaller, less-established rivals has been called predatory.²⁴

A. Different Types of Narratives

1. NPE Suits

Since the term was coined in 1991,²⁵ trolls, or NPEs, have become perhaps the most controversial and least popular group of patent plaintiffs.²⁶ The term NPE generally refers to a patentee that does

20. See Jim Offner, *ITC to Hear Prof's David v. Goliath Patent Case*, E-COMMERCE TIMES, Mar. 21, 2008, <http://www.ecommercetimes.com/story/62247.html>.

21. See *Seoul, Nichia Settle Global LED Patent War*, LAW 360, Feb. 3, 2009, (describing the international "patent war" between Seoul Semiconductor Co. Ltd. and Nichia Corp., including patent and defamation suits in the United States, Europe, Japan, and Korea).

22. See generally Gideon Parchomovsky & R. Polk Wagner, *Patent Portfolios*, 154 U. PA. L. REV. 1 (2005) (describing how firms accumulate portfolios of patents to improve their defensive position).

23. See *infra* Part I.A.1.

24. Bessen & Meurer, *supra* note 1, at 14.

25. Timothy J. Haller & Sally Wiggins, *The Patent Troll Myth*, in IP VALUE 2006, at 113 (2006), available at <http://www.buildingipvalue.com/06homeindex.html>.

26. Indeed, NPEs are also called names such as patent extortionist, patent terrorist, and blackmailer. Gerard N. Magliocca, *Blackberries and Barnyards: Patent Trolls and the Perils of Innovation*, 82 NOTRE DAME L. REV. 1809, 1810 (2007) (blackmailer); Haller & Wiggins, *supra* note 25, at 113 (patent extortionist); Richard Wilder, *Perspective: How to Fight Against Patent Terrorism*, CNET, Jan. 6, 2005, <http://news.cnet.com/How-to-fight->

not make products or “practice” its inventions. Over time, the definition has been narrowed to exclude actors in the innovation enterprise who engage in significant research and development activities²⁷ and individual inventors who seek to commercialize their inventions.²⁸ While definitions vary, the term NPE in this Article refers to a corporate patent enforcement entity that neither practices nor seeks to commercialize its inventions. This definition excludes certain inventors whom others have called trolls, in particular, individual inventors who initiate suits.²⁹ Part II.E, *infra*, describes the differences between individual inventors and trolls, and why I did not include all such plaintiffs in the NPE category.

In support of the NPE business model, companies have been formed to engage in diverse activities such as organizing patent auctions, acquiring patent assets, asserting patent portfolios, and underwriting enforcement activities.³⁰ Proponents of the patent

against-patent-terrorism/2010-1014_3-5513518.html (patent terrorist). *But see* Haller & Wiggins, *supra* note 25, at 113–16 (arguing that NPEs are not necessarily bad just because they do not manufacture the technology that is embodied by the patents they enforce); *see also* James F. McDonough III, *The Myth of the Patent Troll: An Alternative View of the Function of Patent Dealers in an Idea Economy*, 56 EMORY L.J. 189, 201 (2006) (calling NPEs the less offensive term “patent dealers”).

27. *See, e.g.*, Mark Lemley, *Are Universities Patent Trolls?* 18 (Stanford Pub. Law Working Paper Series, Paper No. 980776, 2007), available at <http://ssrn.com/abstract=980776> (concluding that universities are not patent trolls; they are non-practicing entities). Research and licensing companies like Tessera, <http://www.tessera.com/> (last visited Apr. 29, 2009), and Rambus, <http://www.rambus.com/us> (last visited Apr. 29, 2009), have also been excluded from the term NPEs.

28. *See* McDonough, *supra* note 26, at 189 (“A patent troll is a person or entity who acquires ownership of a patent without the intention of actually using it to produce a product.”).

29. For example, one Tobi Kay Gellman apparently brought a patent suit against a number of security companies in Marshall, Texas. *See* Gellman v. ADT Sec. Serv., Inc., No. 2:07-CV-0282, 2008 WL 4280351, at *1 (E.D. Tex. Sept. 10, 2008). My definition does not include this as a troll patent suit, though at least one blogger has, stating:

Toby Kay Gellman of Dallas, Texas is the trustee of the Mayer Michael Lebowitz patent trust. No injunction is sought—just money for a patent involving using cellular technology in alarm systems. I guess if your love [sic] one dies and leaves you just a handful of patents, that could be more valuable than you think.

Troll Cases Pouring Into Eastern Texas, AGORACOM, Aug. 6, 2007, <http://agoracom.com/ir/patriot/forums/discussion/topics/147635-troll-cases-pouring-into-eastern-exas/messages/569392>.

30. *See* Peter N. Detkin, Presentation at FTC Hearing on the Evolving IP Marketplace: To Promote the Progress . . . of Useful Arts, Investing in Invention (Dec. 5, 2008), available at <http://www.ftc.gov/bc/workshops/ipmarketplace/dec5/docs/pdetkin.pdf>; *see also* Raymond Millien, Presentation at FTC Hearing on the Evolving IP Marketplace: The IP Marketplace Players (Dec. 5, 2008), available at <http://www.ftc.gov/bc/>

licensing community emphasize the “central role [licensing plays] in helping commercial entities obtain the rights to use valuable technologies that produce new and beneficial products.”³¹ For some individual inventors and small companies, NPEs have served as “guardian angel[s],”³² providing a path to liquidity previously unavailable.³³

Who do NPEs sue and what form do their suits take? NPEs have a reputation for surprising their targets, typically mature companies that have already developed and sold allegedly infringing products.³⁴ NPEs also typically target multiple defendants and seek settlements.³⁵ For every defendant that is actually sued, many more demands are made.³⁶ Because NPEs have no products of their own, they cannot be countersued for patent infringement.³⁷ NPEs do not risk disruption to their core business—patent enforcement *is* their core business.³⁸

workshops/ipmarketplace/dec5/docs/rmillien.pdf (describing further the diversity of patent licensing and enforcement business models).

31. John C. Paul, D. Brian Kacedon & Michael V. O'Shaugnessy, *Patent Trolls: A Stereotype Causes a Backlash Against Patents and Licensing*, 41 LES NOUVELLES 224, 232 (2006).

32. Lisa Lerer, *Meet the Original Patent Troll*, LAW.COM, July 20, 2006, <http://www.law.com/jsp/law/LawArticleFriendly.jsp?id=900005550324>.

33. See Richard Reisman, “*The Six Phases of a Technology Flop*” . . . *Patents, and Plan B*, May 6, 2008, <http://www.teleshuttle.com/UCM/2008/05/six-phases-of-technology-flop-patents.html> (“[T]he patent as Plan B provided the hedge that made it easier to justify the risks inherent in developing my ideas and starting the Teleshuttle business. In my case that hedge paid off—after 12 years!”); *infra* Part I.A.4 (describing the evolution of Burst.com).

34. See Reitzig et al., *supra* note 2 (describing “troll surprise”).

35. See McCurdy, *supra* note 12, at 80; *infra* Part IV.A.

36. See, e.g., Lerer, *supra* note 32 (describing one NPE as sending “hundreds of nearly identical letters to allegedly infringing companies,” then “su[ing] 50 companies for patent infringement”); Michael J. Meurer, *Controlling Opportunistic and Anti-Competitive Intellectual Property Litigation*, 44 B.C. L. REV. 509, 516–17 (describing the example of E-Data, that allegedly sent 75,000 demand letters resulting in several licenses and a suit against forty-one companies).

37. McCurdy, *supra* note 12, at 81.

38. Lemley, *supra* note 27, at 8 (asserting that trolls do “not contribut[e] anything to society, but rather obtain[] and assert[] patents covering technology independently developed by” others).

Some accuse NPEs of asserting weak patents,³⁹ the validity of which is unlikely to be decided by a court. This follows from a business model based on generating licensing revenue rather than getting an injunction to prevent defendants from making or selling their products. Patent holding company Intellectual Ventures, for instance, holds and has attempted to license large numbers of patents.⁴⁰ If a fraction of these attempts succeed, a revenue stream can be developed without resort to litigation.⁴¹ It is unknown how many NPEs use such a portfolio approach, however. Research company Patent Freedom believes that the majority of NPEs are more selective and strategic,⁴² acquiring relatively smaller numbers of strong, not weak, patents that can withstand invalidity challenges.⁴³

NPEs have focused on high-tech inventions for several reasons.⁴⁴ First, they have historically acquired their patents from distressed or bankrupt companies, principally casualties of the Internet bubble.⁴⁵ Second, products in computer and semiconductor-related industries tend to be covered by many patents, increasing the likelihood of

39. See Sarah Lai Stirland, *Trolling for Patents*, SEATTLE TIMES ONLINE, Nov. 14, 2005, <http://community.seattletimes.nwsourc.com/archive/?date=20051114&slug=pate14> (characterizing patents asserted by NPEs as “broadly written patents with questionable claims” examined by “harried, time-starved patent examiners”); see also Rob Garretson, *Intellectual Security: Patent Everything You Do, Before Someone Else Does*, CIO INSIGHT, Dec. 5, 2005, <http://www.cioinsight.com/c/a/Trends/Intellectual-Security-Patent-Everything-You-Do-Before-Someone-Else-Does/> (stating that trolls may be encouraged to “move on to easier targets” when large companies utilize their own “arsenal of patents” as a weapon).

40. See Amol Sharma & Don Clark, *Tech Guru Riles the Industry by Seeking Huge Patent Fees*, WALL ST. J. ONLINE, Sept. 17, 2008, <http://online.wsj.com/article/SB122161127802345821.html> (stating that Intellectual Ventures “has quietly amassed a trove of 20,000-plus patents” and “ranks among the world’s largest patent-holders”).

41. See Patent Freedom, Current Research: Largest Patent Holdings, <https://www.patentfreedom.com/research-phl.html> (last visited Apr. 29, 2009).

42. *Id.*

43. *Id.*

44. See Patent Freedom, Current Research: Most Pursued Companies, <https://www.patentfreedom.com/research.html> (last visited Apr. 29, 2009) (showing that high-tech companies such as Matsushita, Sony, and Toshiba dominate the list of most pursued companies); Patent Freedom, Current Research: Product Categorization, <https://www.patentfreedom.com/research-pc.html> (last visited Apr. 29, 2009) (showing that high-tech product categories such as semiconductors, software, consumer electronics, and software dominate the patent acquisitions).

45. See Robin M. Davis, *Failed Attempts to Dwarf the Patent Trolls: Permanent Injunctions in Patent Infringement Cases Under The Proposed Patent Reform Act of 2005 and Ebay v. Mercexchange*, 17 CORNELL J.L. & PUB. POL’Y 431, 431 (2008); J.P. Mello, *Technology Licensing and Patent Trolls*, 12 B.U. J. SCI. & TECH. L. 1, 2 n.26 (2006); Joe Beyers, *Perspective: Rise of the Patent Trolls*, CNET NEWS, Oct. 12, 2005, http://news.cnet.com/rise+of+the+patent+trolls/2010-1071_3-5892996.html.

infringement.⁴⁶ Finally, in high-tech or “predictable arts,” it is arguably easier to file a paper patent⁴⁷ that can be bought and sold free of the underlying technology. In contrast, biotechnology inventions have more stringent enablement and written description standards⁴⁸ that are more difficult to meet without having actually made the invention.

However, the role of NPEs in other industries is poised to expand. As the patent marketplace evolves, so likely will business models to support the enforcement or licensing of biotech and other inventions.⁴⁹ In addition, in an economic downturn, startups and companies in all industries are more likely to attempt to cash in their patents by selling them to patent enforcement entities, rather than let them sit on the shelf.⁵⁰

A few attempts have been made to quantify the size of the NPE phenomenon. In 2007 and 2008, a website, Patent Troll Tracker,⁵¹ tracked newly-filed troll litigations across the country.⁵² Unfortunately, this effort was discontinued when the site was the subject of a defamation lawsuit.⁵³ Ball and Kesan released a study in

46. Lemley & Shapiro, *supra* note 14, at 2025–28.

47. A paper patent is a patent covering an invention that exists only on paper, and the invention has not been made or operated.

48. See, e.g., Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology-Specific?*, 17 BERKELEY TECH. L.J. 1155, 1173–74 (2002) (describing the “stringent disclosure standard” applied to biotechnology patents); Sean B. Seymore, *Heightened Enablement in the Unpredictable Arts*, 56 UCLA L. REV. 127, 136–38 (2008).

49. Indeed, NPE Intellectual Ventures describes its portfolio as spanning biotechnology and medical device inventions. Intellectual Ventures, *Who We Are*, <http://www.intellectualventures.com/about.aspx> (last visited Apr. 29, 2009).

50. See, e.g., William-Arthur Haynes, *More Business Eye Mining IP Stash for Cash*, SILICON VALLEY/SAN JOSE BUS. J., Nov. 21, 2008, available at <http://sanjose.bizjournals.com/sanjose/stories/2008/11/24/story3.html> (describing sale of patents to raise funds “in a down economy”).

51. The Patent Troll Tracker website is no longer available to the public and can only be accessed by invited users. Patent Troll Tracker, <http://trolltracker.blogspot.com/> (last visited Apr. 29, 2009). Selected pages have been archived at <http://people.ffi.org/~zoobab/bh.udev.org/filez/swpat/TrollTracker/> (last visited Apr. 29, 2009).

52. See The Prior Art, Patent Troll Tracker Speaks—and Vows to Return, http://thepriorart.typepad.com/the_prior_art/2008/05/patent-troll-tr.html (May 8, 2008, 12:52 EST) (describing the Patent Troll Tracker website as published between May 2007 and February 2008).

53. Mike Masnick, *Troll Tracker Sued For Defamation By Patent Attorneys In East Texas*, TECHDIRT, Mar. 12, 2008, <http://techdirt.com/articles/20080312/020814510.shtml>. The defamation case involved a post on the website claiming that a patent lawsuit was filed the day before the patent was issued. As of May 2009, the case was still pending. ESN LLC v. Cisco Systems, Inc., 5:2008cv00020, Justia Federal Court Filings and Dockets, http://dockets.justia.com/docket/court-txedce/case_no-5:2008cv00020/case_id-107885/ (last visited Apr. 29, 2009).

2008 estimating that 5% of suits in 2000 and 2002 were brought by patent licensing firms.⁵⁴ Patent Freedom has placed the share of NPE suits higher, at approximately 12% in 2008.⁵⁵ Others claim that the number is much lower, closer to 2%.⁵⁶ Without a shared understanding, it is not clear which of the following claims is true: that NPEs “represent the most significant and destabilizing change in the patent environment since 2003,”⁵⁷ or that, “based on the statistics, it’s not obvious that there’s a problem at all.”⁵⁸

2. Litigation-Avoidance/Patent Détente

Others who watch the patent system tell another story: that companies are engaged in defensive patenting. By building portfolios of patents, companies can discourage or neutralize threats of suits brought by their competitors.⁵⁹ This strategy compels firms to patent now in order to avoid litigation later. Instead, the hope is that companies in both industries, well-armed, will reach a patent standoff, or détente. As a Sun Microsystems executive put it in 2005, “[i]f you build up your patent portfolio, I build up mine—nukes pointing at each other That has exactly the right outcome. We sit here and exchange patents with each other.”⁶⁰

Scholars have documented the defensive patenting phenomenon in the semiconductor industry.⁶¹ They have also noted the

54. Gwendolyn G. Ball & Jay P. Kesan, *Transaction Costs and Trolls: Individual Inventors, Small Firms and Entrepreneurs in Patent Litigation* 13 (2008) (unpublished manuscript, on file with the North Carolina Law Review).

55. See Patent Freedom, *Current Research: Litigations Over Time*, <https://www.patentfreedom.com/research-lot.html> (last visited Apr. 29, 2009).

56. Nathan Myhrvold, *Inventors Have Rights, Too!*, WALL ST. J., Mar. 30, 2006, at A14 (“Court records show that only 2% of all patent lawsuits are due to plaintiffs that have no ongoing product business. Of that 2%, the vast majority are perfectly legitimate companies or universities. A tiny minority of patent suits are due to bad actors, but it’s hardly a crisis.”).

57. McCurdy, *supra* note 12, at 78–79; see also Coletta, *supra* note 4 (“Trolls are widely perceived . . . as the bane of the patent system.”). For a survey of academic articles on the subject, see Christopher A. Harkins, *Fending Off Paper Patents and Patent Trolls: A Novel “Cold Fusion” Defense Because Changing Times Demand It*, 17 ALB. L.J. SCI. & TECH. 407, 442–48 (2007); John F. Luman III & Christopher L. Dodson, *No Longer a Myth, the Emergence of the Patent Troll: Stifling Innovation, Increasing Litigation, and Extorting Billions*, 18 INTELL. PROP. TECH. L.J. 1, 1–2 (2006); Daniel J. McFeely, *An Argument for Restricting the Patent Rights of Those Who Misuse the U.S. Patent System to Earn Money Through Litigation*, 40 ARIZ. ST. L.J. 289, 289–90 (2007).

58. Stirland, *supra* note 39.

59. See Parchomovsky & Wagner, *supra* note 22, at 36.

60. John R. Allison et al., *Valuable Patents*, 92 GEO. L.J. 435, 469 n.147 (2004).

61. See, e.g., Bronwyn H. Hall & Rosemarie Ham Ziedonis, *An Empirical Analysis of Patent Litigation in the Semiconductor Industry* 3 (July 30, 2008) (unpublished

accumulation of large patent portfolios in industries that obtain mostly software patents, namely the computer, electronics, and instrument industries.⁶² Financial industries have also witnessed a “patent flood,” or rush to patenting, observers claim, in order to avoid damaging litigation.⁶³ The desire to avoid patent litigation may explain why companies in the semiconductor industry obtain patents even while rating them as ineffective relative to other ways of gaining advantage.⁶⁴ The companies that engage in defensive patenting tend to be large.⁶⁵ This makes them vulnerable to patent litigation but also gives them the ability to underwrite large patent portfolios.

Despite the importance of defensive patenting strategies among high-tech companies, the share of suits involving hardware and software inventions has actually risen, not declined. According to Hall and Ziedonis, the probability that semiconductor firms will be involved in lawsuits as targets of litigation grew from close to 0% in 1973 to close to 10% in 2001.⁶⁶ Bessen and Meurer likewise note that the percentage of suits involving software patents as compared to overall suits has risen, from less than 5% in 1984⁶⁷ to 26% in 2002.⁶⁸ These observations raise the question: why do companies who acquire patents in order to avoid being in court nevertheless end up there? It is unclear whether greater activity by NPEs, a failure of defensive patenting, growth trends in the industry, or something else is to blame.

manuscript), available at http://www.econ.berkeley.edu/~bhhall/papers/HallZiedonis07_PatentLitigation_AEA.pdf (“Evidence from our prior study suggests that the patent reforms led capital-intensive firms in [the semiconductor industry] to ‘ramp up’ their patent portfolios more aggressively—largely to reduce litigation risks.”).

62. See James Bessen & Robert M. Hunt, *An Empirical Look at Software Patents 4* (Fed. Reserve Bank of Phila., Working Paper No. 03-17/R, 2004), available at <http://www.researchoninnovation.org/swpat.pdf>.

63. See, e.g., John Squires, Vice-President, Chief Patent Counsel & Associate General Counsel, Goldman Sachs & Co., Remarks at the Berkeley Roundtable of Patentable Subject Matter (Oct. 3, 2008).

64. Wesley M. Cohen, Richard R. Nelson & John P. Walsh, *Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not) 5* (Nat’l Bureau of Econ. Research, Working Paper No. 7552, 2000), available at <http://www.dklevine.com/archive/cohen-survey.pdf>.

65. Allison et al., *supra* note 60, at 468–69.

66. Hall & Ziedonis, *supra* note 61, at 1.

67. BESSEN & MEURER, *supra* note 8, at 191–92.

68. *Id.*

3. Sport of Kings

When large corporations sue each other, the result can be patent warfare, involving competing claims, multiple patents, and teams of lawyers. Patent litigation is complicated, risky, and expensive. In cases in which \$1 million to \$25 million is at stake, the cost of litigation averages between \$2 and \$3 million.⁶⁹ When more than \$25 million is at stake, the average cost jumps to \$5.5 million.⁷⁰ Given such price tags, it is no wonder that patent litigation among large companies has been called the sport of kings.⁷¹

The patent battles between Creative and Apple, as well as Qualcomm and Broadcom, provide two examples. At the time of trial, the litigants were competitors in the marketplace: Creative and Apple sell rival mp3 players, while Qualcomm and Broadcom both make chipsets for cell phones that operate on 3rd generation, or "3G," networks.⁷² In both cases, numerous litigations were filed in district court and at the International Trade Commission⁷³ and involved claims and counter-claims.⁷⁴ The Apple suit was settled for

69. AM. INTELLECTUAL PROP. L. ASS'N, LAW PRACTICE MGMT. COMM., REPORT OF THE ECONOMIC SURVEY 2007, at I-91 (2007).

70. *Id.*

71. See Kline, *supra* note 1.

72. Susan Decker & Connie Guglielmo, *Apple, Creative Are "Open to Settlement" of Suits*, BLOOMBERG, Jul. 5, 2006, <http://www.bloomberg.com/apps/news?pid=20601087&sid=aSC.LVCARdr4>; Gina Keating, *Qualcomm Barred from Using Broadcom 3G Patents*, REUTERS, Dec. 31, 2007, <http://www.reuters.com/article/technologyNews/idUSN3159063420080101>.

73. *Qualcomm Inc. v. Broadcom Corp.*, No. 3:05CV01958 (S.D. Cal. filed Oct. 14, 2005); *Broadcom Corp. v. Qualcomm Inc.*, No. 3:05CV03350 (D.N.J. filed July 1, 2005); *Broadcom Corp. v. Qualcomm Inc.*, 585 F.Supp.2d 1187 (C.D. Cal. 2005) (filed May 18, 2005); *Broadcom Corp. v. Qualcomm Inc.*, No. 8:05CV00468 (C.D. Cal. filed May 18, 2005); *Creative Technology Ltd. v. Apple Computer Inc.*, No. 4:06CV3218 (N.D. Cal. filed May 15, 2006); In the Matter of Certain Portable Digital Media Players, Notice of Investigation, Inv. No. 337-TA-573 (U.S. Int'l Trade Comm'n June 8, 2006); Certain Baseband Processor Chips and Chipsets, Transmitter and Receiver (Radio) Chips, Power Control Chips, and Products Containing Same, Including Cellular Telephone Handsets, Notice of Investigation, Inv. No. 337-TA-543 (U.S. Int'l Trade Comm'n June 21, 2005).

74. For example, in the dispute between Apple and Creative, Creative initiated an investigation against Apple for the alleged infringement of U.S. Patent No. 6,928,433. See *Certain Portable Digital Media Players*, 71 Fed. Reg. 34,390 (June 8, 2006) (notice). Then, Creative was countersued by Apple in the International Trade Commission ("ITC") for allegedly infringing U.S. Patent Nos. 7,046,230, 5,341,293, 5,898,434, and 6,282,646. See *Certain Portable Digital Media Players and Components Thereof*, 71 Fed. Reg. 38,421 (June 29, 2006) (notice). Likewise, Broadcom first sued Qualcomm for patent infringement, asserting violations of U.S. Patent Nos. 6,374,311, 6,714,983, 5,682,379, 6,359,872, and 6,583,675 in the Central District of California and the ITC. See *Certain Baseband Processor Chips and Chipsets, Transmitter and Receiver (Radio) Chips, Power Control Chips, and Products Containing Same, Including Cellular Telephone Handsets*, 70

\$100 million,⁷⁵ while the Qualcomm and Broadcom dispute continued for several years and recently settled for \$891 million.⁷⁶ Yet suits between large firms may not be strictly competitive in nature. Hall and Ziedonis describe a case in which a large, ailing company mounted an aggressive patent enforcement campaign against other firms just prior to filing for bankruptcy,⁷⁷ well after the company had ceased to be a viable competitor.⁷⁸

Though impressive in its size and complexity, litigation between large firms is not perceived to be the norm.⁷⁹ Relatively few companies can afford to engage in such all-out patent wars, and many who end up in court disclaim any desire to be there.⁸⁰ One would therefore expect patent battles between large companies to be the exception rather than the rule.

4. David v. Goliath

A David v. Goliath suit pits individual inventors against large corporations accused of profiting from the inventors' technology. Such suits are portrayed as countering the attempt of corporations to "fight down the inventor and rob him of all the benefits of his invention."⁸¹ They build upon America's love of entrepreneurs⁸² and

Fed. Reg. 35,707 (June 16, 2005) (notice); Ashlee Vance, *Broadcom Broad-sides Qualcomm with Wireless Chip IP Lawsuit*, CHANNEL REG., May 19, 2005, http://www.channelregister.co.uk/2005/05/19/broadcom_sues_qualcomm/. Qualcomm then countersued in the Southern District of California, accusing Broadcom of infringing six patents pertaining to integrated circuits used in GSM phones and infringing another patent relating to semiconductor chips for Wi-Fi devices. Grant Gross, *Qualcomm Sues Broadcom over Patents*, NETWORK WORLD, July 11, 2005, <http://www.networkworld.com/news/2005/071105-qualcomm.html>.

75. See Press Release, Apple, Inc., Apple & Creative Announce Broad Settlement Ending Legal Dispute Between the Companies (Aug. 23, 2006), *available at* <http://www.apple.com/pr/library/2006/aug/23settlement.html>.

76. See Press Release, Qualcomm Inc., Qualcomm and Broadcom Reach Settlement and Patent Agreement (Apr. 26, 2009), *available at* http://www.qualcomm.com/news/releases/2009/090426_qualcomm_broadcom_settlement.html.

77. Hall & Ziedonis, *supra* note 61, at 17.

78. *Id.*

79. Kline, *supra* note 1 (noting patent owners fear legal fees).

80. See *NetApp Sues Sun for ZFS Patent Infringement*, Dave's Blog, Sept. 05, 2007, <http://blogs.netapp.com/dave/2007/09/netapp-sues-sun.html> (describing how NetApp had no choice but to sue Sun for declaratory judgment of infringement of NetApp's patents after Sun halted communication); *Mosaid Settles Samsung Patent Litigation*, DESIGN & REUSE, Jan. 18, 2005, <http://www.design-reuse.com/news/9487/mosaid-settles-samsung-patent-litigation.html> (quoting the MOSAID Technologies CEO: "[w]e prefer to settle licenses in the boardroom, but we will pursue our rights in court if necessary").

81. 13 CONG. REC. 3952 (1882).

82. Michael J. Meurer, *Inventors, Entrepreneurs, and Intellectual Property Law*, 45 HOUS. L. REV. 1201, 1203 (2008).

the iconization of American inventors—men and women idealized for their “ingenuity, productivity, and creativity.”⁸³

The 2008 movie “Flash of Genius” popularized one archetypal David, independent inventor Robert Kearns, who accused Ford Motor Company and others of stealing his idea for the intermittent windshield wiper.⁸⁴ Kearns ultimately received millions of dollars in royalty payments.⁸⁵ The David v. Goliath story is compelling, not only to moviegoers, but to juries as well, who favor individual inventors at a rate of three to one over the corporations they sue for patent infringement.⁸⁶

According to several studies, individuals and small companies are more likely than large companies to sue on their patents.⁸⁷ This is particularly true in the financial industry, where patents assigned to individuals are an estimated five times more likely to be litigated than those held by public corporations.⁸⁸ The intermediary market for patent enforcement discussed above supports this litigiousness by underwriting litigation that might otherwise be unaffordable for individual inventors.⁸⁹ It also further blurs the distinction between small company, or underdog inventor, and troll.

Take, for example, the case of tech startup turned patent enforcement company Burst.com, founded by individual inventor Richard Lang.⁹⁰ According to one account, though the company initially tried to commercialize and market Lang’s network

83. Kimberly Moore, *Populism and Patents*, 82 N.Y.U. L. REV. 69, 69 (2007).

84. John Seabrook, *The Flash of Genius*, NEW YORKER, Jan. 11, 1993, at 38, available at http://www.newyorker.com/archive/1993/01/11/1993_01_11_038_TNY_CARDS_000_363341; FLASH OF GENIUS (Intermittent Productions 2008); Kearns v. Ford Motor Co., 32 F.3d 1541, 1543 (Fed. Cir. 1994).

85. Seabrook, *supra* note 84, at 38.

86. Moore, *supra* note 83, at 85 n.50 (2007) (stating that in such match-ups juries rule in favor of independent inventors 74% of the time and defendant corporations only 26% of the time).

87. See Allison et al., *supra* note 60, at 439 (“[P]atents issued to individual inventors and small companies are more likely to be litigated.”); Josh Lerner, *The Litigation of Financial Innovations* 15 (Harvard Univ. & Nat’l Bureau of Econ. Research, Working Paper No. 09-027, 2008), available at <http://www.hbs.edu/research/pdf/09-027.pdf> (“Patents assigned to individuals are five times more likely to be litigated than those held by public corporations, and about 50% more likely to be so than those held by private firms (which include both smaller operating firms and patent holding companies).”).

88. See Lerner, *supra* note 87, at 15.

89. See *supra* Part I.A.1.

90. See Peter Burrows, *Underdog or Patent Troll?*, BUS. WK., Apr. 24, 2006, at 58; see also Niro & Greenspoon, *supra* note 6, at 14–16 (describing how International Meta Systems, Inc.’s failure in the marketplace, due to the allegedly predatory practices of Intel, resulted in the sale of the patent to licensing company TechSearch); Reisman, *supra* note 33 (blogging about the demise of his company leading to enforcement of his patents).

transmission technology, it ran into competitive obstacles.⁹¹ After obtaining a \$60 million settlement from Microsoft for infringement of its patents, Burst.com decided to turn to patent enforcement full-time, trimming its staff from 110 employees down to two.⁹² Should Burst.com be characterized as a troll or an underdog? I would argue that when the company stopped trying to commercialize its technology and started focusing on enforcement, it went from being an underdog to being an NPE. A tougher case is presented by an individual inventor who is represented by a contingent fee lawyer. Though the individual inventor may present the face of the litigation, the underwriter may in fact control the litigation.

While such cases do make it difficult to distinguish between NPEs and underdogs, NPE suits and individual inventor suits differ in important ways. First, some independent inventors are perceived as seeking not only money, the main objective of licensing shops, but also justice or vindication by a court.⁹³ In addition, an independent inventor is likely to present a more compelling plaintiff to a court than a licensing shop assignee. Finally, an individual with fewer resources is likely to be more selective, both about its targets and the patents it asserts, as compared to an NPE with relatively deeper pockets and a large portfolio.

The number of David v. Goliath type suits is unknown. Individual inventors, once a dominant source of new inventions, now generate only 12% of patents.⁹⁴ Once obtained, these patents may be harder to enforce by an individual who lacks the financing and resources to monitor for infringement.⁹⁵ Still, along with the classic story of the American inventor,⁹⁶ the David v. Goliath narrative remains an important part of the patent litigation landscape.

5. Predation

The strategic use of patent litigation by established companies to impose distress on their financially disadvantaged rivals has been called patent predation.⁹⁷ Such litigation can damage a defendant's

91. See Burrows, *supra* note 90, at 61.

92. *Id.*

93. See Seabrook, *supra* note 84, at 38.

94. BESSEN & MEURER, *supra* note 8, at 169.

95. Meurer, *supra* note 82, at 1233–34 (describing the obstacles faced by small firms in enforcing patents, which also extend to independent inventors).

96. See Moore, *supra* note 83, at 69.

97. Jean O. Lanjouw & Josh Lerner, *Tilting the Table? The Use of Preliminary Injunctions*, 44 J.L. & ECON. 573, 573–74 (2001); Meurer, *supra* note 36, at 521.

credit rating, its relationship with customers, and its reputation with investors, regardless of how the suit is ultimately resolved. By suing less-established firms, critics say, predatory plaintiffs can use litigation to threaten their survival.⁹⁸ Observers call companies who assert weak patents in such a context patent bullies.⁹⁹

Verizon's suit against Vonage provides a case study.¹⁰⁰ Vonage, a pioneering internet telephone company, presented a competitive threat to Verizon, a telecommunications giant.¹⁰¹ When Verizon sued Vonage for patent infringement, it was described as the attempt of a "deep-pocketed incumbent to drive an innovative competitor out of business."¹⁰² The court ruled that Vonage's products were infringing three of Verizon's patents and ordered Vonage to pay \$58 million, a significant setback to its attempt to turn a profit.¹⁰³ The court also enjoined Vonage from signing new customers,¹⁰⁴ which Vonage was quoted as saying would amount to its "slow death."¹⁰⁵ Ultimately, the injunction was stayed by the Federal Circuit¹⁰⁶ and did not succeed in driving Vonage out of business, as was feared.¹⁰⁷ Still, it and suits by other incumbents have continued to burden Vonage.¹⁰⁸

While some call this type of suit "opportunistic,"¹⁰⁹ there's another side to the story. Verizon invests heavily in research and

98. Meurer, *supra* note 36, at 523–24.

99. Stuart J.H. Graham & Ted Sichelman, *Why Do Start-Ups Patent?*, 23 BERKELEY TECH. L.J. 1063, 1080 (2008).

100. *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1302 (Fed. Cir. 2007); Graham & Sichelman, *supra* note 99, at 1080–81.

101. Graham & Sichelman, *supra* note 99, at 1080.

102. Timothy B. Lee, *Vonage Is the Latest Victim of Patent Abuse*, THE AMERICAN, Apr. 24, 2007, <http://www.american.com/archive/2007/april-0407/vonage-is-the-latest-victim-of-patent-abuse>.

103. *Verizon Servs. Corp.*, 503 F.3d at 1301–02; Marguerite Reardon, *Vonage to Pay \$58 Million in Verizon Patent Case*, CNET NEWS, Mar. 8, 2007, http://news.cnet.com/2100-1036_3-6165747.html.

104. Anne Broache, Marguerite Reardon & Declan McCullagh, *After Setback, Vonage Wins Temporary Relief*, CNET NEWS, Apr. 6, 2007, http://news.cnet.com/2100-1036_3-6173991.html.

105. Matthew Barakat, *Vonage Injunction Stayed in Patent Case*, USA TODAY, Apr. 24, 2007, http://www.usatoday.com/tech/techinvestor/industry/2007-04-24-vonage-stay_N.htm.

106. *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 228 Fed. Appx. 986, 986 (Fed. Cir. Apr. 24, 2007); *CAFC Stays Permanent Injunction Against Vonage Pending Appeal*, Patently-O Patent Law Blog, Apr. 25, 2007, http://patentlyo.com/patent/2007/04/vonage_gets_sta.html.

107. Timothy B. Lee, *A Patent Lie*, N.Y. TIMES, June 9, 2007, at A15.

108. See Graham & Sichelman, *supra* note 99, at 1080–81 (describing litigation brought by AT&T and Sprint, in addition to Verizon).

109. Meurer, *supra* note 36, at 509.

development with a laboratory of 350 to 400 researchers.¹¹⁰ Verizon's suit could fairly be characterized as a way for it to secure a return on its investments in innovation. In addition, some might argue predatory suits simply represent an exercise by large companies of their competitive advantages in intellectual property.

Although patent predation has received relatively little scholarly attention, several aspects of the Vonage case reinforce what others have observed. First, predation strategies appear to be more common in high-tech industries like internet telephony.¹¹¹ This may be because innovation in those industries is incremental, thereby increasing the risk that a new entrant will tread upon previous advances.¹¹² Second, injunctions appear to provide a particularly potent weapon for carrying out predatory strategies.¹¹³ Their potency is one reason that predatory patent litigation is regarded as "more likely to succeed" than other predatory tactics.¹¹⁴

6. Limited Stakes, Small Company v. Large Company, and University Suits

The above stories represent what I consider to be the dominant categories of high-tech patent litigation. But many suits do not fit into any of them. In this Section, I describe three additional types of litigation: limited stakes, small v. large company, and university suits. We tracked such suits as well in our study.

Some patent suits represent garden variety business disputes between small- and medium-sized companies. While many companies are small- or medium-sized,¹¹⁵ they have less revenue than large companies. This sets a relatively lower limit on the value at stake in patent disputes between them, making them limited stakes.

Other patent suits take the form of a small company suing a large company. Small company plaintiffs resemble individual and NPE plaintiffs insofar as their exposure to counterclaims is limited. In addition, because of the difficulties of identifying NPEs described

110. Toby Weber, *Blinding Them with Science*, TELEPHONY ONLINE, Jul. 23, 2001 http://telephonyonline.com/mag/telecom_blinding_science/.

111. See Meurer, *supra* note 36, at 523.

112. See Lee, *supra* note 102; Lemley & Shapiro, *supra* note 14, at 1994–96.

113. See Lanjouw & Lerner, *supra* note 97, at 573.

114. Meurer, *supra* note 36, at 516.

115. Of the private company plaintiffs profiled by revenue in this dataset, for example, we classified approximately 60% as small (annual revenue of less than \$10 million), 26% as medium-sized (annual revenue from \$10 million–\$100 million) with 22% of the 26% having revenues of less than \$50 million, and only 14% as large (annual revenue of over \$100 million).

infra Part IV, some small company plaintiffs may in fact be NPEs, and by extension, small company v. large company suits may represent NPE suits.

Finally, some suits involve university patentees suing various defendants.¹¹⁶ While scholars have carried out a number of studies on university patenting,¹¹⁷ less academic attention has been paid to university patent litigation. The important university patents seem to be in biotechnology areas.¹¹⁸ Though universities are generally large entities, like NPEs, they have limited exposure because they do not make products. In addition, public universities can assert a sovereign immunity defense.¹¹⁹

B. Comparing the Narratives

These narratives can be matched to actual litigations based on party profile (Fig. 1). Together with a team of research assistants, I analyzed each dispute in two different ways—with respect to who brought each suit, and also with respect to each suit's plaintiff-defendant pair, or case-pairing. The first analysis was accomplished by placing each party into one of a limited number of categories: individual, NPE, nonprofit (university and other nonprofits), private non-NPE company, and public non-NPE company.¹²⁰ Many of the plaintiffs or defendants in our sample were private companies, with a wide range of company profiles.¹²¹ Thus, we further classified each

116. For two examples, see *Univ. of Rochester v. G.D. Searle & Co.*, 358 F.3d 916 (Fed. Cir. 2004) and *In re Columbia Univ. Patent Litig.*, 343 F. Supp. 2d 35 (D. Mass. 2004).

117. For a review of the studies analyzing university patenting, see generally Nicola Baldini, *University Patenting and Licensing Activity: A Review of the Literature*, RES. EVALUATION, Dec. 2006, at 197, 197.

118. See, for example, the patents that were the subject of the cases listed *supra* note 116.

119. The Eleventh Amendment of the U.S. Constitution provides that “[t]he Judicial power of the United States shall not be construed to extend to any suit in law or equity, commenced or prosecuted against one of the United States by Citizens of another State” U.S. CONST. amend. XI; see also *Fla. Prepaid Postsecondary Educ. Expense Bd. v. Coll. Sav. Bank*, 527 U.S. 627, 647–48 (1999) (holding invalid the attempt of the Patent and Plant Variety Protection Remedy Clarification Act to expressly abrogate the States’ sovereign immunity). For a discussion of whether the sovereign immunity defense should apply in patent disputes, see Eugene Volokh, *Sovereign Immunity and Intellectual Property*, 73 S. CAL. L. REV. 1161 (2000).

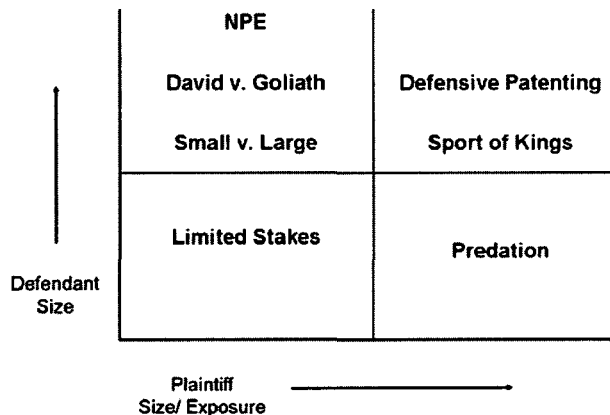
120. For a detailed description of the party categories, see *infra* Appendix A.

121. For instance, Freescale Semiconductor is privately held and, according to its website, employs 24,000 people with FY2007 worldwide revenues of \$5.7 billion. See Freescale, About Freescale, <http://www.freescale.com/webapp/sp/site/homepage.jsp?nodeId=06> (last visited Apr. 29, 2009). In contrast, the private company Adesso Technology is estimated to have twenty employees and annual revenues of \$3.7 million.

private company as small, medium, or large based on available revenue information reported on the Hoovers.com website (premium edition). In order to carry out the second analysis, matching the suits to the stories, we profiled each suit based on plaintiff-defendant pair and then matched each suit profile to the narrative that best matched it. We also recorded duration data for completed suits.

As noted before, previous discussions of patent litigation tend to focus on one or a few litigation stories in isolation. The present analysis, in contrast, analyzes different types of suits together and attempts to provide an empirical context for comparing them. Figure 1 presents a stylized framework for thinking of these types of suits.

Figure 1: Narratives of Patent Litigation



Small plaintiff-large defendant

Several litigation stories fit within the case pairing of small plaintiff-large defendant. David v. Goliath suits, for instance, feature an individual inventor suing a corporation. Most NPE suits, which pit small licensing shops against mature, well-established companies, also fit the small plaintiff-large defendant profile. Not all NPEs are small, however—well-known NPE Acacia Research Corporation¹²² is

See Adesso Technology Inc., Company Overview, Hoover's, http://www.hoovers.com/Adesso-Technology-Inc./--HD_xcktsxjsj,src__dbi--/free-co-dnb_factsheet.xhtml (last visited Apr. 29, 2009).

122. The Acacia Research Corporation is listed on NASDAQ under the symbol ACTG.

publicly traded with a multi-million dollar market capitalization.¹²³ In the present analysis, suits brought by an NPE, as well as suits for declaratory judgment brought against NPEs, were characterized as NPE suits regardless of the size of the parties. Finally, cases brought by small private companies against public or large private ones, or so-called small v. large suits, also fit this case pairing.

Large plaintiff-large defendant

This Article has described two ways in which large plaintiff-large defendant disputes may resolve. If defensive patenting is successful, most suits between such players should be avoided and instead result, at most, in cross-licensing. However, in some cases, companies may also choose to follow an offensive strategy of suing other large companies who may or may not also be competitors. Such sport of kings suits are more likely to be complex and potentially protracted, with claims of infringement on both sides.

Large plaintiff-small defendant

Predatory plaintiffs target less financially-established defendants. The typical predatory suit, therefore, features a large firm suing a small one. Cases with this profile are identified in this Article as having a predation profile. This coding has limitations, however. Predatory suits are hard to identify based on profile alone, since they require the plaintiff's intent to impose financial distress on the defendant. In addition, a company does not necessarily need to be large to engage in predation. One account describes a "company of modest size using a high-profile ... law firm ... to go after [seventeen] tiny companies and individuals" in an attempt to "extract settlements from little guys with the threat of astronomical legal costs."¹²⁴ This suit may be predatory even though it doesn't fit the classic large v. small company profile.¹²⁵

Small/medium plaintiff-small/medium defendant

Limited stakes litigation, brought by small- or medium-sized plaintiffs against small- or medium-sized defendants, fit in the lower left hand quadrant. Even in cases where the stakes are low, the costs of litigation remain high—for suits in which less than \$1 million is at

123. See Acacia Research Corporation, Yahoo! Finance, <http://finance.yahoo.com/q?s=ACTG> (last visited Apr. 27, 2009) (listing a market cap of \$134.4 million on April 27, 2009).

124. Brian Kahin, *Under the Radar: Two Tales From the Secret Life of Patents*, HUFFINGTON POST, July 25, 2008, http://www.huffingtonpost.com/brian-kahin/under-the-radar-two-tales_b_115022.html.

125. *Id.*

risk, the average price tag is \$461,000 per suit to the end of discovery, and \$767,000 to the conclusion of the suit.¹²⁶

What does the empirical data tell us about the relative prevalence of these different types of suits? Part II describes how we obtained the data to classify suits into different categories to address this question, and Part III sets out the answers the data provides.

II. DATA AND METHODS

To develop a profile of litigation behavior in various computer-related industries, I used data from the Stanford IPLC.¹²⁷ The IPLC includes all patent infringement lawsuits, including declaratory judgment suits for noninfringement filed from January 1, 2000 to the present. The underlying data is derived from Public Access to Court Electronic Records (“PACER”), an electronic reporting service of the United States court system.¹²⁸ Based on a manual checking process, the IPLC excludes false positive cases (e.g., miscoded cases, patent licensing cases, etc.) and includes false negative cases (infringement cases never before coded as such).¹²⁹

I selected cases filed between January 1, 2000 and March 21, 2008 involving hardware, software, and financial patents based on the United States Patent and Trademark Office (“USPTO”) patent classification of the litigated patents, as coded by the IPLC.¹³⁰ Scholars have used a variety of different criteria to select patents belonging to various industries, each with its own shortcomings. Selecting patent and litigation cases based on company,¹³¹ for instance, can blur the distinction between industry sectors, as large companies often have multiple lines of business. For example,

126. AM. INTELLECTUAL PROP. L. ASS’N, *supra* note 69, at I-91.

127. For an overview of the IPLC, see generally Press Release, Stanford Law School, Stanford Law School Launches Intellectual Property Litigation Clearinghouse (Dec. 8, 2008), available at <http://www.law.stanford.edu/program/centers/iplc/> (follow “Press Releases” hyperlink).

128. Administrative Office of the U.S. Courts, PACER Service Center, <http://pacer.psc.uscourts.gov/> (last visited Apr. 29, 2009).

129. E-mail from J.H. Walker, Executive Director, IP Lit. Clearinghouse, Stanford Law School, to author (Oct. 10, 2008, 11:35 EST) (on file with the North Carolina Law Review); see also Mark A. Lemley & J.H. Walker, *Intellectual Property Litigation Clearinghouse: Data Overview 1* (2007 Kauffman Symposium on Entrepreneurship and Innovation Data, Stanford Pub. Law Working Paper No. 1024032, 2007), available at <http://ssrn.com/abstract=1024032> (indicating that research assistants manually check the IPLC data).

130. For a detailed description of the definitions used in this study, see *infra* Appendix B.

131. See, e.g., Hall & Ziedonis, *supra* note 61, at 3–4.

General Electric has diversified beyond power generation into fields ranging from medical imaging to media content to financial services,¹³² defying attempts to classify it into a single industry. Meta classifications that aggregate USPTO classifications, such as those offered by the National Bureau of Economic Research, are generally too large to facilitate in-depth study of particular industries.¹³³ However, on the opposite extreme, studies based on manually reading and classifying each patent yields a classification scheme that cannot be replicated, thereby making comparisons with other analyses difficult.¹³⁴ Selecting patent and litigation cases based on keyword searching of the claim language is likely to be more precise but is prone to produce under or overinclusive results depending on the keywords selected.¹³⁵

*Table 1: Data–Description of High-Tech Patents
by Industry and Year*

Industry Category ¹³⁶	Suits ¹³⁷	Year of Suit	Number of Suits
Financial	513	2000–2001	205
Hardware	589	2002–2003	444
Software	1512	2004–2005	690
		2006–2008	961
		Total	2,300

132. GE Products & Services Index: Listing of GE products and GE businesses, http://www.ge.com/products_services/directory/by_product.html (last visited Apr. 29, 2009).

133. The National Bureau of Economic Research uses six main technological categories: Computers and Communications, Drugs and Medical, Electrical and Electronics, Chemical, Mechanical, and Others. Bronwyn H. Hall, Adam B. Jaffe & Manuel Trajtenberg, *The NBER Patent Citations Data File: Lessons, Insights, and Methodological Tools 1* (NBER Working Paper Series, Paper No. 8498, 2001), available at <http://papers.nber.org/papers/w8498.pdf>. This approach has been described as “rather crude.” Allison et al., *supra* note 60, at 472.

134. E.g., Allison et al., *supra* note 60, at 443–48.

135. See, e.g., Bessen & Hunt, *supra* note 62, at 8–10.

136. See *infra* notes 139–41 for the specific USPTO classifications for each category.

137. A number of suits fit into more than one industry category, but the total number of unique cases in the dataset was 2,300.

For this analysis, I applied a compromise approach of selecting a limited number of USPTO classes that describe computer-related hardware, software, and financial inventions.¹³⁸ The hardware category includes patents classified by the USPTO as covering semiconductor technologies, memory, and digital processing (chip) architectures and design.¹³⁹ The software category includes patents covering user interfaces, database technology, software development, computer graphics, and cryptography.¹⁴⁰ The financial inventions category includes patents classified by the USPTO as financial process, business practice, management, or cost/price determination data processing inventions.¹⁴¹ Though USPTO classification schemes have also been criticized for misclassifying cases into one class rather than another,¹⁴² I limited the impact of any misclassification by aggregating related classes.

138. This decision was informed by my experiences prosecuting patents in these fields while a patent practitioner at a California-based technology law firm.

139. Included in the hardware category are the following USPTO classifications: 716 (Data Processing: Design and Analysis of Circuit or Semiconductor Mask), 385 (Optical Waveguides), 712 (Electrical Computers and Digital Processing Systems: Processing Architectures and Instruction Processing (e.g., processors)), 438 (Semiconductor Device Manufacturing: Process), 257 (Active Solid-State Devices (e.g., transistors, solid-state diodes)), and 340 (Communications: Electrical).

140. Included in the software category are the following USPTO classifications: Classes 703 (Data Processing: Structural Design, Modeling, Simulation, and Emulation), 717 (Data Processing: Software Development, Installation, and Management), 324 (Electricity: Measuring and Testing), 369 (Dynamic Information Storage or Retrieval), 700 (Data Processing: Generic Control Systems or Specific Applications), 701 (Data Processing: Vehicles, Navigation, and Relative Location), 709 (Electrical Computers and Digital Processing Systems: Multicomputer Data Transferring), 704 (Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/Decompression), 711 (Electrical Computers and Digital Processing Systems: Memory), 713 (Electrical Computers and Digital Processing Systems: Support), 710 (Electrical Computers and Digital Data Processing Systems: Input/Output), 345 (Computer Graphics Processing and Selective Visual Display Systems), 715 (Data Processing: Presentation Processing of Document, Operator Interface Processing, and Screen Saver Display Processing), and 707 (Data Processing: Database and File Management or Data Structures). In 2004, Graham and Mowery did a study of software patents based on the list of USPTO classes, three-quarters of which are included in the current sample. Stuart J.H. Graham & David C. Mowery, *Software Patents: Good News or Bad News?* 14 (GaTech TIGER Working Paper Series, 2004), available at http://tiger.gatech.edu/files/gt_tiger_software.pdf.

141. The entire financial inventions category is composed of one USPTO classification: Class 705 (Data Processing: Financial, Business Practice, Management, or Cost/Price Determination).

142. See, e.g., John R. Allison & Mark A. Lemley, *Who's Patenting What? An Empirical Exploration of Patent Prosecution*, 53 VAND. L. REV. 2099, 2114 (2000) ("We were not content to rely on the PTO classification system, . . . [as] we did not find it particularly reliable. In the course of this study, we came upon numerous instances of what appear to us to be wrong or arbitrary classification decisions.").

This approach yielded a total of 2,300 unique high-tech patent litigation cases (Table 1). Around 300 of the cases were classified by the IPLC into more than one class, yielding some duplicates between each of the three industry categories. Thus, I created two databases: one of unique cases, which I used to generate the summary statistics found in this Article, and a database containing cases associated with each reported class, including duplicates, which I used to calculate the industry category statistics reported in this Article.

A team of research assistants and I profiled each litigation based on the plaintiffs and defendants named in each case. Each party was placed into one of a limited number of categories: public company, NPE, individual, non-profit, and private company. Private companies were further coded as small, medium, or large based on revenue data, where available, as described *supra* Part I.B.

The definitions and methods of identification are described in detail in Appendix B. Generally, however, we identified public companies, including their subsidiaries, based on the profile information provided by the Edgar database of the Securities and Exchange Commission.¹⁴³ We identified universities and governments by name and placed them together with nonprofit organizations identified by their websites in the category of nonprofit. We coded parties as individuals if the first named party was an individual, including individuals listed as “dba” (doing business as) a corporate entity.

We identified parties as NPEs if the entity was described by a court description, industry code, news article, entity website, or blog post as a non-practicing enforcement/licensing entity, NPE, or troll. When a company described as an NPE also fit into another category, it was placed in the NPE category. This methodology is conservative for several reasons. First, many licensing shops do not advertise, making it difficult to verify what they do.¹⁴⁴ We coded entities for which we found no information about the company’s operations as private companies, when in fact some may be licensing companies. Second, when an individual’s name comprised the first named party, we coded the party as an individual. Yet, as described earlier, some of these suits are likely funded by non-practicing enforcement/licensing entities.

143. U.S. Securities and Exchange Commission, Filings & Forms, <http://www.sec.gov/edgar.shtml> (last visited Apr. 29, 2009).

144. For example, NTP, the licensing entity that sued Research in Motion, does not have a website.

We classified companies that did not fit into any of the aforementioned categories as private corporations. We generally confirmed the private company status of these companies by referencing the company website, complaints posted to the IPLC or PACER, or other Internet description. We classified companies with revenues less than \$10 million as small, companies with annual revenues between \$10 million and \$100 million as medium, and companies that made more than \$100 million annually as large.¹⁴⁵ The \$10 million threshold is based on values published by the Small Business Administration and previous empirical research,¹⁴⁶ and the \$100 million threshold is based on a calculation performed on high-tech Russell 3000® companies.¹⁴⁷ After the initial coding was complete, we performed quality checks to ensure accuracy.

Where an individual party belonged to several classes, we used a hierarchy to place it into the most specific applicable category. Thus, NPEs and universities/nonprofits were identified and coded first. Public companies and individuals were coded next. If the party fell into none of these categories, it was classified as a private company.

In a subset of cases, there were multiple plaintiffs or defendants. This information was captured in two ways. First, we counted and recorded the number of defendants. In doing so, we attempted to determine the number of distinct, rather than individual, defendants. This mattered most in cases where individuals were named in addition to their corporate identity or alter ego¹⁴⁸ or where multiple corporate entities all belonging to the same parent entity were

145. Ball and Kesan use a similar set of ranges to define companies as small, medium and large, except that their large category only includes companies with annual revenue of \$500 million or more. Ball & Kesan, *supra* note 54, at 11.

146. *Id.*; see also Small Business Administration, Size Standards, http://www.sba.gov/contractingopportunities/officials/size/SUMM_SIZE_STANDARDS_INDUSTRY.html (last visited Apr. 29, 2009) (describing a wide range of revenue thresholds for a variety of industries but stating that \$7 million in average annual receipts is the “widely used size standard” for defining nonmanufacturing industries).

147. Ninety percent of high-technology companies in the Russell 3000® index had trailing twelve month revenues of \$100 million and above based on data retrieved in February 2009. I defined high-tech companies as those included in the following industry groups, as identified by the Russell 3000®: Computers, Telecommunications, Electric, Electronics, Semiconductors, Internet, Software, & Diversified Financial Services industries. The Russell 3000® index measures the performance of the largest 3,000 public companies. Russell 3000® Index, http://www.russell.com/Indexes/characteristics_fact_sheets/us/Russell_3000_Index.asp (last visited Apr. 29, 2009).

148. For example, Stephen Conner and The Conner Group were counted as a single defendant.

named.¹⁴⁹ I used this information to generate statistics based on the number of defendants in cases filed and to supplement the data on the absolute number of cases filed. This was done to give another view of the litigation burden associated with each dispute, as a single suit may impose costs on many defendants.

Second, the analysis assumed that among multiple co-parties to a suit, the largest entity was the real target or promulgator (or at least the deep pocket) of the suit. For example, when a suit was brought against an individual person and corporate or university defendant, the defendant group was profiled according to the corporate or university defendant. I used the party profiles to generate case pairings, for example, individual v. public company or nonprofit v. private company. Duration information for each suit was also captured based on IPLC coding of the start and end dates of litigation. Non-terminated cases were not included in the duration analysis.

Based on this data, we generated statistics to present a snapshot of (1) who brings lawsuits, and (2) the prevalence of various litigation stories or narratives. To determine the prevalence of each narrative, I matched each case pairing to the narrative that best approximated it. The definitions we applied to the cases are summarized in Table 2 and described in greater detail in Appendix B.

149. For example, Daimler Benz AG and Mercedes-Benz USA, LLC were coded as a single defendant.

Table 2: Case Pairing Definitions

Narrative/ Term	Definition
NPE	Suit brought by an NPE, or DJ suit brought against an NPE
Sport of Kings	Suit brought by a public or large private company against a public or large private company
David v. Goliath	Suit brought by an individual against a public or large private company, or DJ suit brought by a public or large private company against an individual
University/ Nonprofit suits	Suit brought by a university or nonprofit
Predation Profile	Non-DJ suit brought by a public or large private company against a small private company, or a DJ suit brought by a small private company against a public or large private company
Small v. Large	Non-DJ suit brought by a small private company against a public or large private company, or a DJ suit brought by a public or large private company against a small private company
Limited Stakes	Suit brought by a small- or medium-sized private company against a small- or medium-sized private company
Other	Suit that does not fall into the above categories

Some suits were for declaratory relief, reversing the normal posture of parties. Suits that name NPEs as defendants, for instance, commonly seek a declaration of non-infringement. To ensure that cases were placed in the correct category, we checked the declaratory judgment (“DJ”) status of cases that presented potential coding errors. To do so, we read the complaints of a sample of cases that fell into each category (based on a 95% confidence rate with a 5% confidence interval) and classified them as DJ or non-DJ cases.¹⁵⁰

150. For a number of categories, the declaratory judgment status of a case did not impact its profile coding. Sport of kings suits, for instance, involve large companies suing each other, and limited stakes suits involve small- and medium-sized parties suing each

III. RESULTS

A. *Who Brings High-Tech Patent Lawsuits?*

Despite the scrutiny computer-related patents have received, attention has generally been focused elsewhere than on the simple question: who brings high-tech patent suits? Table 3 reports the answer to this question: by and large, non-NPE corporations do. 76% of all suits were brought by public or private corporations, and among industries, the range was 71–84%. Individuals initiated 5% of suits and nonprofits 1%.¹⁵¹ That left the NPE share at 17%, including 8% of all hardware suits and 23% of all financial suits.

*Table 3: Cases by Plaintiff,
Calculated Based on Absolute Number of Suits*

Plaintiff Category	Hardware	Software	Financial	All Suits
NPE	8%	20%	23%	17%
Non-NPE Public Corporation	50%	41%	30%	39%
Non-NPE Private Corporation ¹⁵²	34%	34%	41%	37%
▪ Large (\$100 million+)	4%	3%	3%	3%
▪ Medium (\$10–\$100 million)	6%	4%	6%	5%
▪ Small (<\$10 million)	13%	11%	10%	12%
Individual	6%	4%	5%	5%
Nonprofit	2%	1%	1%	1%
Total	100%	100%	100%	100%

Given the amount of attention NPEs have received, one might expect NPE suits to comprise a greater share of high-tech patent

other; thus, the declaratory judgment status of these cases is irrelevant. In addition, I assumed cases brought by NPEs, as well as those brought by individuals, were not for declaratory relief.

151. *Accord* Ball & Kesan, *supra* note 54, at 12 (explaining that “universities were not highly active in litigation” and that universities never pursued litigation without a co-plaintiff).

152. Private companies for whom no revenue data was available were not placed into any category, representing about 17% of plaintiffs.

disputes. Instead, the statistics in Table 3 seem to confirm what others have found:¹⁵³ that NPEs have brought less than one-fifth of the patent suits studied.

However, a closer look at the suits themselves tells a different story. When they sue, NPEs typically name multiple defendants, each of whom faces the prospect of being part of an ongoing litigation. Past studies of patent litigation have failed to take this into account, focusing solely on the absolute number of suits. Yet, every suit brought against multiple defendants takes its toll on each defendant. To account for this, we also calculated the number of cases brought based on the number of defendants named.¹⁵⁴ Accordingly, a suit against three defendants was counted three times, while a suit against one defendant was counted once. As described earlier, we attempted to count only distinct defendants, for instance, counting multiple named corporate entities all belonging to the same parent entity as a single defendant.¹⁵⁵

*Table 4: Cases by Plaintiff,
Calculated Based on Number of Defendants Sued*

Plaintiff Category	Hardware	Software	Financial	All Suits
NPE	13%	30%	40%	26%
Non-NPE Public Corporation	44%	31%	17%	30%
Non-NPE Private Corporation	31%	31%	36%	35%
Individual	9%	7%	6%	8%
Nonprofit	3%	0%	0%	1%
Total	100%	100%	100%	100%

Based on this methodology,¹⁵⁶ the average share of cases brought by NPEs grew to 26%, putting it on par with public and private corporations.¹⁵⁷ More strikingly, of all suits involving financial

153. Namely, the statistics in Table 3 correspond to those found by Ball & Kesan (5%) and Patent Freedom (12%). *See supra* text accompanying notes 54–55. Note, however, that those figures are not industry specific.

154. *See supra* Table 2.

155. *See supra* notes 148–49.

156. *See supra* Table 4.

157. The mean number of defendants in NPE cases was 3.4, and the median was 2.0.

patents, trolls initiated 40%, the largest single share. In software, NPEs brought 30% of suits, and in hardware, 13% of suits.

The percentage of suits brought by individuals also grew when the number of defendants was counted.¹⁵⁸ This indicates that individuals are naming more than the average number of defendants in each lawsuit. In this way, individuals are behaving more like NPEs and less like corporations (whose shares dropped) in terms of the number of defendants they name.

B. What Types of Suits Are Most Prevalent?

We looked at plaintiff-defendant pairs, matched them to the suit stories described earlier, and considered what types of suits were most prevalent. As described earlier,¹⁵⁹ where we suspected that the DJ status of a case would impact its classification (for instance, cases brought against trolls and individuals), we used a sample to place suits into the correct category.

In addition, about 20% of the suits were brought by or against parties for which no revenue information was available. For the purposes of classifying suits into a case category only, we adopted the assumption of Ball and Kesan that such companies were small due to their limited footprint.¹⁶⁰ This assumption is supported in our study by the predominance of small companies among the private companies we studied for which revenue information was available—82% had less than \$50 million in annual revenue.¹⁶¹ This assumption influenced the outcomes principally by increasing the share of limited stakes, predation profile, and small v. large suits, and decreasing the share of sport of king suits.¹⁶² The data are reported in Table 5.

158. The mean number of defendants in suits brought by individuals was 3.3, and the median was 1.0.

159. See *supra* note 150 and accompanying text.

160. See Ball & Kesan, *supra* note 54, at 11.

161. See *supra* note 115.

162. If cases where no revenue was available for a private party were removed from the dataset, rather than assumed to be small, the values would be: 24% NPE, 5% David v. Goliath, 10% small v. large, 41% sport of kings, 7% limited stakes, 4% predation profile, 2% nonprofit, and 6% other.

*Table 5: Lawsuits by Category,
Calculated Based on Absolute Numbers of Suits¹⁶³*

Suit Category	Hardware	Software	Financial	All Suits
NPE	9%	21%	26%	19%
David v. Goliath	5%	3%	3%	4%
Small v. Large	15%	17%	18%	18%
Sport of Kings	38%	36%	19%	28%
Limited Stakes	17%	11%	19%	16%
Predation Profile	10%	7%	7%	8%
Nonprofit	2%	1%	3%	2%
Other	4%	5%	5%	5%

Among the results, a few are striking. It appears that many disputes initiated by large companies, that is, public companies and large private companies in the dataset, are brought against other large companies. Twenty-eight percent of all suits, the largest share, fit this sport of kings profile. This in itself may not seem surprising; the bulk of software patents are owned by corporations,¹⁶⁴ many of them large corporations, and the same is likely true of hardware patents. But when the various litigation narratives are compared,¹⁶⁵ the contrast between perception and reality becomes more pronounced.

NPEs are known as willing, if not eager, litigants, having built a business around patent enforcement.¹⁶⁶ In contrast, public high-tech companies are generally portrayed as reluctant litigants, carefully constructing portfolios of patents to avoid going to court. One might therefore expect to see relatively fewer suits in the sport of kings category and more suits in the NPE category. As reported in Table 5, however, the opposite is true—overall, NPE suits comprised only 19% of the total, as compared to the 28% share of sport of kings suits. This difference is statistically significant.¹⁶⁷ This means that when a

163. When calculated based on numbers of defendants sued, the results were, for NPE, David v. Goliath, small v. large, sport of kings, limited stakes, predation profile, nonprofit, and other categories, respectively, 28%, 5%, 19%, 21%, 16%, 7%, 1%, and 4%, respectively.

164. Bessen & Hunt, *supra* note 62, at 3–4.

165. See *supra* Table 3.

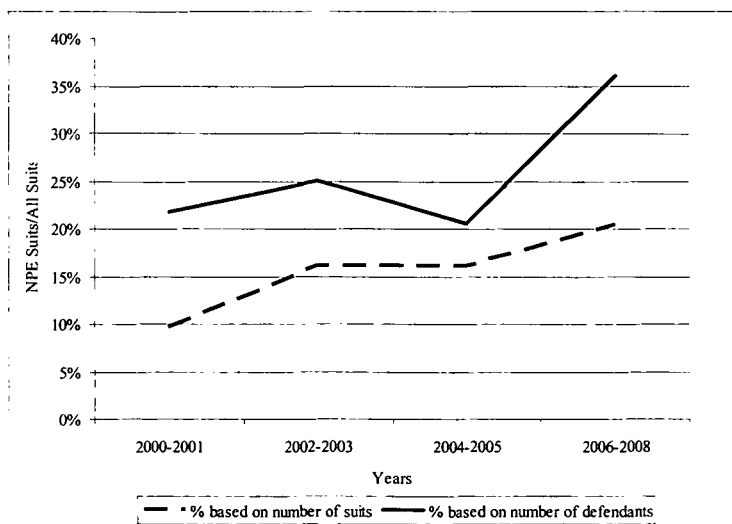
166. Lerer, *supra* note 32 (citing an NPE's reputation as an aggressive litigator who is "quick on the trigger" as responsible for bringing in settlements). For conflicting opinions regarding whether this is really the case, see discussion *supra* Part II.A.I.

167. I used a standard chi-square test to examine the null hypothesis that NPE and sport of king suits were equally likely to be filed, yielding a p-value of 6.1 x e-13. A p-

suit was brought naming a public or large private company defendant, the plaintiff-patentee was much more likely to be another large company than an NPE. Notably, the trend was exaggerated in the case of hardware patents (38% sport of kings vs. 9% NPE) and reversed in the case of financial patents (19% sport of kings vs. 26% NPE).

The share of NPE suits over the eight year period (19%) was greater than the share of suits in which NPEs were plaintiffs (17%), as reported in Table 3. This difference is attributable to DJ cases brought against NPEs, which comprised some 2% of the total. Yet other figures are also relevant. Based on a methodology that counts the number of defendants (not shown), for instance, the share of NPE suits jumps to 28%. In addition, as shown in Figure 2, the share of NPE suits appears to be rising over time. During the 2000–2001 period, NPE suits accounted for 10% of the total, but double that, 20% of suits brought in 2006–2008 based on absolute count. Counting defendants, the NPE suit share was 22% in 2000–2001 and 36% in 2006–2008. As observed before, the NPE phenomenon seems to be most pronounced in the financial industry, followed by the software industry; it was least important in the hardware industry.

Figure 2: NPE Suits¹⁶⁸



value of less than 0.05 is generally interpreted as an indication that the null hypothesis can be rejected (making it statistically significant), while a value greater than 0.10 is viewed as showing that any differences are not statistically significant.

168. Data points shown: 10%, 16%, 16%, 20% (based on number of suits); 22%, 25%, 21%, 36% (based on number of defendants).

The remaining suits took various forms. 18% of suits were brought by small companies against large ones, comparable to the share of NPE suits (19%). As discussed earlier, due to the difficulties of identifying NPEs, some of these suits may actually be NPE suits.¹⁶⁹ 16% of the suits were limited stakes contests between small- and medium-sized parties. In addition, suits by large companies against small ones—so called predatory profile suits—comprised 8% of all suits. This is not an insignificant share, and is double the share of David v. Goliath suits (4%). Nonprofit/university suits represented a small share of the total (2%).

C. *How Long Do High-Tech Patent Lawsuits Last?*

Beyond the initial point of filing, what happened once suits were filed? The burdens associated with a lawsuit can vary tremendously, depending on how far the dispute continues before it terminates, either through court adjudication, settlement, or other resolution.

Table 6: Average Suit Duration

Category	Months
NPE Suit	9.1
David v. Goliath	14.6
Small v. Large	11.4
Sport of Kings	14.0
Limited Stakes	11.2
Predation Profile	13.3

In order to estimate the fates of different types of suits, we calculated how long they lasted.¹⁷⁰ There was wide variation. Sport of king suits lasted 14.0 months on average while NPE suits tended to be resolved more quickly, lasting only 9.1 months. Suits brought by individual inventors lasted around 14.6 months on average, longer than suits brought by public companies against each other.

On the surface, this data seems to support some of the stories of litigation that are told. That NPE suits resolve the most quickly of any category is broadly consistent with the objective of obtaining a settlement rather than winning. In contrast, the relatively long

169. However, given the very different distribution of these suits across industries as compared to NPE suits and our confirmation that many of these small companies were operating, it's unlikely most of them are.

170. See *supra* Table 4.

duration of David v. Goliath suits seems consistent with a motivation of vindication, not just financial gain. Yet it could be something much simpler—merely that NPEs file in faster jurisdictions. Still, it is likely that some NPE suits are settling early, according to one of several dynamics. In cases where an NPE abandons its case or reduces its target settlement to avoid substantial litigation after filing, an NPE's bark may prove to be worse than its bite. In other cases, however, an NPE may drive settlement through aggressive litigation tactics that are meant to intimidate its opponents. Thus, the duration figures reported here would seem to provide a starting point and some clues for further research, rather than the basis for any strong conclusions.

IV. DISCUSSION AND FUTURE RESEARCH

This Article presents a snapshot of the litigation of computer-related patents. It reports relative trends and does not address what may comprise an “optimal” level of overall patent litigation. While patent defendants in general would prefer less litigation, at least filed against them, most would probably agree that a meaningful court remedy is an essential part of a functioning patent system.

With these caveats in mind, four findings are worth further discussion and possible research.

A. *The Limits of Defensive Patenting*

Large private and public corporations initiated 42% of all lawsuits studied. These suits were against other large private and public corporations 28% of the time. If large companies are amassing portfolios of patents with the objective of avoiding litigation, why are they involved in so many lawsuits?

One obvious reason large companies are in court is that individuals, NPEs, and small companies are suing them. Defensive patenting is not intended to, nor does it, guard against lawsuits brought by plaintiffs with little, if any, product revenue. Such suits are explored further below in the discussion of asymmetric stakes.

Several other factors may explain the relatively large number of suits between large corporations. First, it may be that the number of suits, though seeming large when compared to the number of suits overall, is not that large relative to the size of the industries, the amount of money at stake, and the levels of innovation. This study does not measure the number of “avoided” suits or control for any of these variables.

In addition, defensive patenting is most effective when the companies suing each other have overlapping patent and product coverage. However, it may be that plaintiffs are suing in areas in which they don't operate. The plaintiff may have acquired the patent at suit from another company or may be in the practice of filing patents over inventions that never mature into products. Under such conditions, the plaintiff's exposure would remain low, even in the face of a portfolio of defendant patents.

The empirical findings of Bessen and Meurer seem to support this hypothesis. They find that, in general, a substantial number of suits between public companies involve firms that are not market competitors or even technologically close.¹⁷¹ According to their research, 29% of the public company v. public company suits they studied involved "true competitors" in the same industry, 43% had overlapping product lines, and 28% had no industry overlap—not one business segment in common at the three-digit SIC level.¹⁷² Related, companies may be suing those with whom they have one-off interactions as opposed to those with whom they have repeated interactions.¹⁷³

To some extent, these and NPE suits represent failures of the defensive patenting strategy, which is unable to deter against these unexpected threats by companies with limited interaction in the marketplace.

Finally, the relatively high levels of large company-initiated litigation may reflect that many companies are not strictly following a defensive patenting strategy. Companies that patent primarily for defensive reasons may also engage in selective enforcement to build a reputation for toughness that deters others from copying. Or they may occasionally engage in strategic or predatory litigation. Finally, companies' intentions with respect to patents may change over time. As public companies in the sample, such as Rambus, turned from operating to non-operating companies, for instance, their motives for acquiring patents likely also shifted from defensive to offensive.

For all of these reasons, it does not appear that defensive patenting is succeeding at preventing many companies with high-technology patents from bringing or defending against patent suits. An inquiry at the company level would likely lend further insights.

171. Bessen & Meurer, *supra* note 1, at 19.

172. *Id.* at 18; *supra* Table 3.

173. Bessen & Meurer, *supra* note 1, at 18.

B. *Counting NPEs*

NPE plaintiffs initiate 17% of all suits (Table 2), yet, when defendants are counted, the share was 26% (Table 3). Factoring in declaratory judgments, the share rose to 28% (Table 4). In the 2006–2008 period, this figure was 36% counting defendants and 20% counting suits (Fig. 2). These numbers demonstrate that, when trying to measure the NPE phenomenon, it matters how you count them. While this study, unlike others, counts defendants, this methodology is not necessarily better than counting cases. Counting defendants arguably better captures the point of view of defendants who are named in NPE suits. However, multi-defendant litigation differs in many ways from single-defendant litigation and, in many cases, reduces the pressure on a single defendant to, for instance, devise theories for why the asserted patent is invalid.

Several other issues complicate the task of assigning a single, definitive number to NPEs. Defining and identifying trolls is an inexact science,¹⁷⁴ making it difficult to compare this Article's estimates to others. Patent Freedom, for instance, reports that NPE suits comprised around 12% of the total in 2006–2008¹⁷⁵ in comparison with this Article's 20% figure for the 2006–March 2008 period. Because this 20% includes only high-tech suits, whereas Patent Freedom's 12% is calculated across industries, these numbers seem to confirm that NPEs have focused more on high-tech than other inventions. But Patent Freedom also uses a different, proprietary approach to counting NPEs, which it describes as "necessarily incomplete,"¹⁷⁶ also accounting for some of the difference. Finally, because both of these numbers focus solely on litigation, they ignore threats that do not mature into lawsuits.¹⁷⁷ If it's true that the proportion of patent threats to patent suits is higher for NPEs than for other patentees, these and other studies that focus solely on litigation understate the NPE phenomenon.

C. *Patterns of Litigation by Industry*

The data highlight the significant differences in patterns of litigation between industries. NPEs appear to be relatively more active in the litigation of financial inventions, bringing 26% (Table 5)

174. See *supra* Part I.A.1.

175. Patent Freedom, Current Research: Litigations Over Time, <https://www.patentfreedom.com/research-lot.html> (last visited Apr. 29, 2009).

176. *Id.*

177. See *infra* note 186.

of the suits studied. This figure rose to around 42% of the total when suits were counted according to the number of defendants.¹⁷⁸ This suggests that NPEs are an important driver of the much higher rates of litigation of financial inventions relative to other patents.¹⁷⁹

NPEs accounted for a relatively smaller share of software patent suits (21%)¹⁸⁰ and an even smaller share of hardware suits (9%).¹⁸¹ Why are NPEs more active in the litigation of financial patents? Lerner speculates that the high rate of litigation of financial inventions may be due, in part, to the substantial uncertainty associated with financial patents.¹⁸² NPEs may be more willing to exploit this uncertainty than corporations, leading to their share. Or, perhaps corporations holding software and hardware patents are more litigious than those holding software patents. The *State Street* decision,¹⁸³ which allowed companies to patent business methods, was handed down in 1998, whereas hardware and certain software inventions have been patentable since at least the early 1980s.¹⁸⁴ Thus, financial services companies have had a shorter period of time in which to become familiar and comfortable with patent litigation than their hardware and software counterparts.

Also notable was the significant share of sport of kings hardware and software suits (38% and 36%, respectively). This suggests that the objective of defensive patenting in these industries, as noted above, is not being served.

178. This figure is based on the author's calculation.

179. Lerner, *supra* note 87, at 2 (reporting that financial patents are twenty-seven to thirty-nine times more likely to be litigated than patents are generally).

180. This figure is derived from counting cases, not defendants.

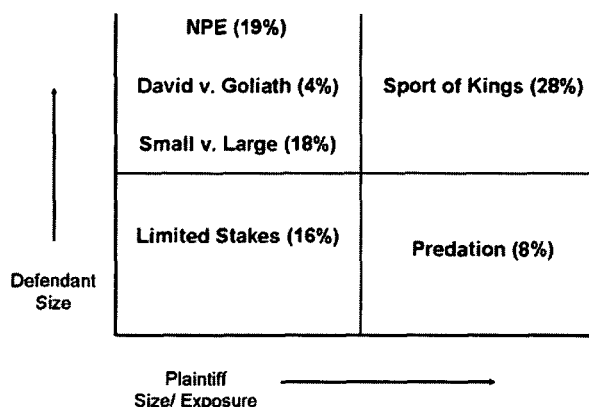
181. *Id.*

182. Lerner, *supra* note 87, at 25.

183. *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1368 (Fed. Cir. 1998).

184. *Diamond v. Diehr*, 450 U.S. 175, 191 (1981).

Figure 3: Narratives of Patent Litigation—Match to Evidence¹⁸⁵



D. Asymmetric Stakes

Finally, while much attention has been focused on NPEs, several other categories of suits—David v. Goliath, and small v. large—also feature a small plaintiff, with limited exposure, suing a large defendant with greater exposure. Forty-one percent of all cases fell into one of these “asymmetric stakes” categories—the single largest quadrant share. Large companies may lump these types of suits together, given their similarities. If that’s the case, NPEs may be getting more blame for opportunistic litigation than they are owed, for cases brought by small operating companies and independent inventor plaintiffs. However, why this number is so large is worth further study. Whether it reflects the opportunism of small plaintiffs and an exploitation of the asymmetries between parties, technology transfer between small patentees and large operating companies, or something else is unclear.

CONCLUSION

These theories suggest directions for future research. This Article provides a high-level snapshot of litigation behavior but leaves much to be explored at the company level. In addition, while providing a robust discussion of different patent litigation narratives, this study says little about the reported 99% patents that are never

185. Not shown: Nonprofit suits (2%) and Other Suits (5%). See *supra* Table 5.

litigated or the 95% that are never licensed.¹⁸⁶ Still, the snapshot discussed here provides one way to talk about the different ways in which the patent litigation system is being used, with reference to its roles of incenting innovation and facilitating its development. Deepening our understanding of patent litigation will provide a perspective on whether or not the system is working and, based on that, how it may be improved.

186. It is estimated that only 5% of patents are the subject of licensing and 1% of litigation. Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1507 n.55 (2001).

APPENDIX A: PARTY CATEGORIES, DEFINITIONS, AND METHODS
OF IDENTIFICATION

Party Category	Definition	Methods of Identification ¹⁸⁷
Public Company	Non-NPE, publicly-traded company (including foreign exchanges) or subsidiary of same; also includes joint ventures owned by public companies	Checked internet sites tracking public company status primarily via http://www.sec.gov ; and in some cases, http://www.hoovers.com (premium edition) and http://www.finance.yahoo.com
NPE	Non-NPE corporate patent enforcement entity that neither practices nor seeks to develop its inventions	<p>Looked for descriptions on the internet of the entity's activities; coded NPE where the entity was described as a non-practicing enforcement/licensing entity, NPE, or troll; main sources included entity website, court pleading or order, SEC disclosure/description, Hoover's line or description of business, or press account; could be owned by a corporation or nonprofit</p> <p>Examples:</p> <p>1) Court decision description: "Synesi Group, Inc. is an inactive Minnesota corporation that currently has no assets. Synesi was formed in 1999 for the purpose of generating licensing revenue through two patents, U.S. Patent #6922720 and U.S. Patent #7020692 . . ." (http://caselaw.lp.findlaw.com/d/ata2/minnesotastatecases/appunpub/0809/opa071868-0923.pdf)</p>

187. Based on company name as listed by IPLC, and where needed, primary place of business as identified in the complaint.

Party Category	Definition	Methods of Identification ¹⁸⁸
NPE	Non-NPE corporate patent enforcement entity that neither practices nor seeks to develop its inventions	<p>2) Industry coding: Synchrome Technology Inc's. industry identified as "6794:Patent owners and lessors" (http://0-premium.hoovers.com.sculib.scu.edu/subscribe/basic/factsheet.xhtml?ID=ksjfkshs)</p> <p>3) News article: List of IP Court cases involving select non-practicing entities, including F & G Research Inc. (http://www.scienceprogress.org/wp-content/uploads/2009/01/issue2/mccurdy.pdf)</p> <p>4) Entity website: in 1998, TVI "reorganized as a patent licensing company" (http://www.tvi.com/index.htm)</p> <p>5) Blog post: "ST Sales Tech Holdings LLC v. Chrysler . . . (Tyler, 7/24/07). Another entity apparently related to the Constellation companies. Although this one isn't a child of Plutus (see earlier entries)—it appears to be directly owned by Erich Spangenberg. . . . And now a handful of companies have yet another patent troll case to contend with." (http://agoracom.com/ir/patriot/forums/discussion/topics/147635-troll-cases-pouring-into-eastern-texas/messages/569392-TrollTracker)</p>
Individual	Individual person	First named plaintiff is an individual (including individuals described as "doing business as" as a corporate entity)

188. Based on company name as listed by IPLC, and where needed, primary place of business as identified in the complaint.

Party Category	Definition	Methods of Identification ¹⁸⁹
Nonprofit	Non-NPE Nonprofit entity	Entity represents a college, university, government, or recognized nonprofit engaging in operating activity, confirmed at entity website
Private Company	Non-NPE, privately held company or subsidiary of same; default category for companies that do not fit into any other category	<p>No confirmation that the company was public, an NPE, an individual, or a nonprofit based on the methods described above. In most cases, private company status confirmed via company websites and press accounts that company was selling products</p> <p>Private companies were further split into the following size categories based on estimated revenue figures provided by Hoovers.com (premium edition):</p> <ul style="list-style-type: none"> ▪ Small private company (annual revenues of less than \$10 million) ▪ Medium private company (annual revenues of from \$10 million-\$100 million) ▪ Large private company (annual revenues of more than \$100 million) ▪ Unknown (revenue information not available)

189. Based on company name as listed by IPLC, and where needed, primary place of business as identified in the complaint.

APPENDIX B: SUIT CATEGORIES AND CASE-PAIRING DEFINITIONS

Narrative	Definition	Case Pairing Definitions
NPE	Suit brought by an NPE, or DJ suit brought against an NPE	Cases where plaintiff is NPE + DJ cases where defendant is NPE
Sport of Kings	Suit between two public companies, or a public company and a large private company	Cases where both plaintiff and defendant are public or large private company
David v. Goliath	Suit brought by an individual against a public or large private company, or DJ suit brought by a public or large private company against an individual	Non-DJ cases where plaintiff is an individual and defendant is a public/large private company + DJ cases where plaintiff is a public/large private company and defendant is an individual
University/ Nonprofit Suits	Suit brought by a nonprofit	Nonprofit plaintiff
Predation	Non-DJ suit brought by a public or large private company against a small private company, or a DJ suit brought by a small private company against a public or large private company	Non-DJ cases where plaintiff is public or large private company and defendant is small private company + DJ cases where plaintiff is small private company and defendant is public or large private company
Small v. Large	Non-DJ suit brought by a small private company against a public or large private company, or a DJ suit brought by a public or large private company against a small private company	Non-DJ cases where plaintiff is small private company and defendant is public or large private company + DJ cases where plaintiff is public or large private company and defendant is small private company
Limited Stakes	Suit between two small or medium-sized private companies	Cases where both plaintiff and defendant are individuals, small, or medium-sized private companies
Other	Suit that does not fall into the above categories	Medium- or large-sized private companies v. medium- or large-sized private companies